

REVISITING TRADITIONAL ASSUMPTIONS IN PRINCIPLES-AND-PARAMETERS THEORY

Dalila Ayoun, Ph.D.*
University of Arizona

Empirical data from languages as diverse as French, Arabic, Dutch and Brazilian Portuguese lead us to re-examine two traditional assumptions of principles-and-parameters theory. The first one is that most parameters are binary-valued as opposed to multi-valued. The second one is that parameter values are mutually exclusive, as opposed to mutually inclusive; i.e., languages must select one of two possible options. It is suggested that some languages may allow multiple-switch settings: both settings are used for different constructions, in the case of syntactic parameters, or different words, in the case of phonological parameters. These languages raise interesting questions from a learnability perspective in both first and second language acquisition. It is briefly suggested that these superset languages may not create insurmountable differences. In fact, empirical data show that second language learners do entertain both setting of a parameter at once.

INTRODUCTION

Two long-standing assumptions in principles-and-parameters theory are as follows: first, parameter settings are binary; second, these settings are mutually exclusive. This paper suggests that these traditional assumptions should be revisited in light of cross-linguistic empirical data and theoretical analyses of a variety of phonological and syntactic phenomena. It is proposed that: 1) although some parameters are binary, other parameters may be multi-valued; and 2) not all parameter settings are mutually exclusive; instead, some parameter settings may be mutually inclusive.

Atkinson (1990) notes that “nothing in principle rules out the possibility of multiple switch-settings” (p. 13). This remark may be understood in two different ways: the first possible interpretation is that some parameters are multi-valued instead of binary; the second interpretation is that parameter settings are not mutually exclusive. Both possibilities will be examined starting with binarity which has already been proposed in the literature. Finally, learnability implications for first and second language acquisition will be briefly discussed.

BINARITY AND PARAMETERS

Parameters of Universal Grammar have always been assumed to be binary for two main reasons: first, to explain cross-linguistic variation, and second, to simplify the task of language acquisition, as eloquently put by Radford (1997, p. 20):

the child's learning task will be further simplified if it turns out [...] that the values which a parameter can have fall within a narrowly specified range, perhaps characterizable in terms of a series of binary choices. This simplified parameter-setting conception of the child's acquisition task has given rise to a metaphorical acquisition model in which the child is visualized as having to set a series of switches in one of two positions (up/down) – each such switch representing a different structural parameter. [...] Of course, an obvious implication of the switch metaphor is that the switch must be set in either one position or the other, and so

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cannot be set in both positions.

Radford follows most researchers in adopting Chomsky's metaphor for language acquisition in a literal sense. Metaphors are useful in explaining a new concept, but may be misleading when interpreted too literally. Moreover, a metaphor is certainly not sufficient grounds upon which to embrace a particular concept. Just as the principles-and-parameters framework was initially presented as a speculative assumption which may turn out to be incorrect, this view of language acquisition may prove to be inaccurate as well. Let us examine it more carefully. First, no experimental studies in first language acquisition have been cited to support statements such as the following:

Acquisition of language is in part a process of setting the switches one way or another on the basis of the presented data, a process of fixing the values of the parameters (Chomsky, 1988, p. 63).

This assumption should be treated as a testable claim to be confirmed or disconfirmed, not as a well-established fact. It is thus reasonable to ask the following question: where does the notion of binarity come from? It actually has a long history in various linguistic and non-linguistic fields.

First, and as also acknowledged by Radford in the above quote, Atkinson (1990) points out "that binarity sits comfortably with the switch-setting analogy offered by Chomsky (1988) [...]" (p. 13). Atkinson also reminds us that this traditional view of parameters can be traced back to the work of Jakobson, Fant, and Halle (1952) and Jakobson (1968) in phonology. Second, Piattelli-Palmarini (1989) links this notion of binary parameter setting to "selective theory in biology." Third, binarity is a basic concept in mathematics and computer sciences. Are these arguments sufficient to assume that all language parameters must also conform to binarity? The answer may be negative.

Examples of Binary Parameters

Phonological parameters

Most phonological parameters appear to be binary such as the metrical parameters suggested by Dresher & Kaye (1990). These metrical parameters have the following respective settings in English, Polish and Hungarian (Archibald, 1993, p. 41):

	<u>English</u>	<u>Polish</u>	<u>Hungarian</u>
P1: The word-tree is strong on the	[Right]	[Right]	[Left]
P2: Feet are	[Binary]	[Binary]	[Binary]
P3: Feet are built from the	[Right]	[Right]	[Left]
P4: Feet are strong on the	[Left]	[Left]	[Left]
P5: Feet are quantity-sensitive (QS)	[Yes]	[No]	[Yes]
P6: Feet are QS to the	[Rime]	[N/A]	[Nucleus]
P8A: There is an extrametrical syllable	[Yes]	[No]	[No]
P8: It is extrametrical on the	[Right]	[N/A]	[N/A]

If a parameter is instantiated in a particular language, it allows only one setting, which also implies that phonological parameter settings are mutually exclusive.

Let us consider, however, the rhythm parameter suggested by Nespor & Vogel (1989). Although it is traditionally assumed to be binary as well, it poses a challenge for a

strictly binary account. Most languages are either stress-timed such as English or syllable-timed such as French. However, Nespor (1990) points out that Catalan is unusual in presenting some characteristics of both stress-timed and syllable-timed languages (Dauer, 1983). Another exception is Portuguese, particularly Brazilian Portuguese, which “has been said to be a language whose rhythm is changing from syllable-timed to stress-timed (cf. Major, 1981)” (Nespor, 1990, p. 164). According to Nespor, a third language, Polish, stands out with regards to the rhythm parameter in that:

Polish appears also to be an intermediate case: it has a very complex syllable structure as well as alternating rhythmic stress (cf. Rubach & Booij, 1985), but no rule of vowel reduction at normal rates of speech. Vowels are reduced in fast speech; this is, however, a phonetic process that is not typical of “stress-timed” languages only, but takes place in “syllable-timed” languages as well (cf. den Os, 1988). Again, it is not surprising that Polish is considered stress-timed by some linguists (e.g., Rubach & Booij, 1985) and syllable-timed by others (Hayes & Puppel, 1985). (p. 164)

In other words, not all languages fall neatly in one of two categories or settings: stress-timed or syllable-timed. This fact prompts Nespor (1990) to argue against a phonological rhythm parameter altogether, contra for example Selkirk (1984) and Nespor & Vogel (1989). She nevertheless acknowledges that the alternative to a parametric account is an undesirable “application of different non-rhythmic phonological rules” (Nespor, 1990, p. 172). It may be preferable to adopt a multi-valued parameter with three settings (stress-timed, syllable-timed and alternating) which would more accurately account for the facts of languages as diverse as English, French, Catalan and (Brazilian) Portuguese.

Syntactic parameters

Most syntactic parameters are claimed to be strictly binary as well. For example, the Head Direction Parameter states that every phrase has a head which determines its nature (i.e., noun phrase, verb phrase, etc.). The head may precede or follow its complement creating so-called head-initial or head-final languages. English is an example of a head-initial language whereas Japanese and Korean are examples of head-final languages as formalized in (1) from Atkinson (1992, p. 92):

1. The Head-Direction Parameter
 $X' = YP^* - X$ (head-final)
 $X' = X - YP^*$ (head-initial)

However, at least one language does not fall within a binary account of the Head Direction parameter. Huang (1982) argues that Chinese word-order shows that: 1) Chinese is strictly head-final for NPs; but 2) in the VP complements may follow the head; and 3) Chinese is head-initial for PP. In other words, Chinese does not fit into a strictly head-initial or head-final binary view and must be accounted for.¹

At least two multi-valued parameters have been suggested: the Governing Category Parameter by Wexler and Manzini (1987) and Manzini and Wexler (1987), and the cross-linguistic account of *pro*-drop phenomena by Saleemi (1990). The latter is briefly reviewed below.

The Null Subject Parameter

Following Safir (1985) and Hyams (1986), Saleemi (1990) proposes that “*pro*-drop and postverbal subjects originate from separate, if not entirely independent, parameters” (p. 236). Saleemi’s analysis builds on previous work (Bouchard, 1984; Chomsky, 1986; Lasnik & Saito, 1984; Rizzi, 1982; Safir, 1984, 1985). “The crucial assumption is that the formal licensing and identification of null subjects are independent processes (see Adams (1987), Jaeggli and Safir (1989), Rizzi (1986), for views along similar lines; also Huang (1984))” (p. 236). To account for cross-linguistic variation in the identification of null subjects and the type of pronouns which may be dropped in a variety of languages (Yiddish, Malagasy, Icelandic and Faroese in addition to “traditional” *pro*-drop languages such as Italian and Spanish), Saleemi suggests a multi-valued version of the null subject parameter reproduced in (2):

2. The Null Subject Parameter
 - The assignment of Case to *s* may be delayed until LF; where *s* a subject represents
 - a. \emptyset ; or
 - b. nonargument; or
 - c. nonreferential argument; or
 - d. any argument whatsoever.

To paraphrase Saleemi, value (a) represents languages such as French and English, which do not allow null subjects; value (b) is exemplified in languages such as German, which only allow the omission of non-arguments; value (c) corresponds to languages such as Yiddish, Malagasy, and the Scandinavian languages, Icelandic and Faroese, which drop all non-referential subjects (i.e., quasi-arguments and non-arguments); and the last value corresponds to languages such as Italian and Spanish (and possibly Chinese and Japanese), which allow the omission of all subjects. This formulation of the null subject parameter acknowledges that not all languages are strictly [+*pro*-drop] or [–*pro*-drop] since inter-linguistic facts are more complex and subtle. The burden is on the binary accounts to include all languages which exhibit some form of null arguments, and so far, these accounts have proven to be unsatisfactory.

MUTUALLY EXCLUSIVE OR MUTUALLY INCLUSIVE SETTINGS?

The second possible interpretation of Atkinson’s (1990) statement “nothing in principle rules out the possibility of multiple switch-settings” (p. 42) is that parameter settings may not be mutually exclusive. This is exactly the remark Fodor (1998) briefly makes while considering the issue of ambiguous triggers in first language acquisition:

The two values of a parameter are standardly assumed to be mutually exclusive. This is not a necessary truth. Of course, no one construction can have both values [...] but it does not follow that a language cannot have both values as options (it would be a superset language, subject to the Subset Principle). For example, Chomsky (1993) suggests that Arabic may have both strong and weak Tense features. (p. 21)

The claim that Arabic may have both strong and weak Tense features will be examined below. If the two (or more) settings of a parameter can be instantiated in different languages, they may also be instantiated in different constructions in the same language.

Phonological Parameters

As discussed above, Polish does not fall neatly into either one of the two well-recognized settings of the rhythm parameter since it alternates between a stress-timed language and a syllable-timed language, which leads different phonologists to disagree on the best way to characterize it. Furthermore, it exhibits alternating rhythmic stress. This fact can be accommodated by positing a third setting for the rhythm parameter which becomes multi-valued instead of being binary. The second characteristic, the alternating stress also instantiated in Brazilian Portuguese, can be explained if we entertain the possibility that parameter settings are not mutually exclusive. I would like to suggest that a language may use more than one setting of a parameter for different structures subsumed under the same parameter or, in the case of the rhythm parameter, for different words. Thus some words are stress-timed, others are syllable-timed, while other words use an alternating stress. Catalan is another example of a language which uses both settings of a parameter since it is both stress-timed and syllable-timed. Let us now turn to syntactic parameters.

Verb Movement Phenomena

Within the Minimalist framework (Chomsky, 1992, 1995), finite verbs move to INFL before Spell-out to have their strong morphological features checked and erased to avoid a violation of the Full Interpretation Principle. It follows that verb movement does not apply to verbs in English because its verbal paradigm is morphologically poor, lacking features of person and number, contrary to French. However, English allows auxiliary movement known as *have/be* raising (Roberts, 1998) or V-to-I raising with a more limited scope (Battye & Roberts, 1995). English also has short verb movement in so-called “quotative inversion” (Collins & Branigan, 1997).

Non-finite lexical and auxiliary verbs should not raise since their morphological features are weak. But we will see that French allows short movement of both thematic and auxiliary verbs past negation and adverbs. The parameter in question is alternatively referred to as the verb movement parameter (Pollock, 1997), the V-Raising parameter (Culicover, 1997), the V-to-I parameter (Deprez, 1994), or the (strength of) AGR parameter (Williams, 1994) for it depends on the [\pm strong] feature of AGR. The parametric effects of strong versus weak morphological features have been studied mostly with French (Baker, 1991; Deprez, 1994; Emonds, 1978; Pollock, 1989, 1997) and English (e.g., Chomsky, 1995; Culicover, 1997; Pollock, 1989, 1997; Roberts, 1998), but also with Arabic and other languages with asymmetric word order agreement to be reviewed below (Bolotin, 1995; Ouhalla, 1994).

Verb movement in French, English and Spanish

Postulating the D-structure for both French and English in (3) allows us to conclude that whenever a lexical verb appears to the left of a negation or adverbial element, it has raised out of its initial position.

3. [IP NP I ([Neg not/pas]) [VP (Adv) V...]]

Let us consider the following examples illustrating the properties subsumed under the verb movement parameter: negation placement in (4), adverb placement in (5), floating quantifiers in (6) and inverted questions in (7):

- | | | |
|----|---|---|
| 4. | a. Children do not read books | a.*Children read not books |
| | b. Les enfants ne lisent pas de livres | b.*Les enfants ne pas lisent de livres |
| | c. Los niños no leen libros | c.*Los niños leen no libros |
| 5. | a. Children always read books | a.*Children read always books |
| | b. Les enfants lisent toujours des livres | b.*Les enfants toujours lisent des livres |
| | c. Los niños siempre leen libros | c. Los niños leen siempre libros |
| 6. | a. The children all read books | a.*The children read all books |
| | b. Les enfants lisent tous des livres | b.*Les enfants tous lisent des livres |
| 7. | a. Do they read books? | |
| | b. Lisent-ils des livres? | |
| | c. ¿Leen libros? | |

These examples show that French exhibits verb movement for all finite lexical verbs while English verb movement is limited to *have/be* raising. Spanish appears to be an intermediary case, exhibiting verb movement in some cases, but not in others. The traditional approach is to assume that French is a “[+mvt] language,” so to speak, and the data which do not follow neatly from the theoretical predictions must be accommodated somehow.

There are two such cases for which an *ad hoc* explanation is necessary. First, the placement of *ne personne* (‘no one’) differs from the placement of other negation in compound tenses such as *passé composé* and it is assumed that *personne* is somehow different.

- | | | |
|----|-------------------------|-------------------------|
| 8. | a. Paul n’a vu personne | a.*Paul n’a personne vu |
| | b. Paul n’a rien vu | b.*Paul n’a rien vu |
| | c. Paul n’a pas vu | c.*Paul n’a vu pas |

According to Pollock (1989, p. 418) “*personne* and *ne* do not form a constituent B in particular, that *personne* is the head of its own NP and that *ne* is plausibly base-generated in the specifierless NegP above the participial SC.”

Second, the theory predicts that only [+finite] verbs are strong enough to raise out of their initial position; [– finite] verbs, lexical verbs and auxiliaries alike, should remain *in situ*, but it is not so for the French auxiliaries *être* and *avoir* which optionally move past negation and adverbs (Pollock, 1995, 1997; Roberts, 1998) as follows:

- | | |
|-----|--|
| 9. | a. Ne pas être / n’être pas en vacances, c’est dommage.
‘to not be on vacation is a pity’ |
| | b. Ne pas avoir faim / n’avoir pas faim, c’est bizarre.
‘to not be hungry is bizarre’ |
| 10. | b. Souvent être / être souvent malade, c’est triste.
‘to often be sick is sad’ |

Furthermore lexical verbs move past adverbs as well, as follows:

- | | |
|-----|---|
| 11. | a. Souvent arriver / arriver souvent en retard, ce n’est pas professionnel.
‘to often arrive late is not professional’ |
|-----|---|

These facts force Pollock to assume that auxiliaries undergo short movement to a different landing site, another INFL, in contrast with the long movement undergone by lexical verbs; while Roberts (1998) suggests that some French speakers entertain two different grammars: one which allows *have/be* raising and one which does not (Pollock, 1995, as cited in Roberts, 1998). Furthermore, nonfinite lexical verbs must move past *personne* contrary to *rien* and *pas* as shown in the following examples:

- | | | |
|-----|--|--------------------------------------|
| 12. | a. Ne pas travailler, c'est ennuyeux
'not to work is boring' | a.*Ne travailler pas, c'est ennuyeux |
| | b. Je préfère ne rien dire
'I'd rather not say anything' | b.*Je préfère ne dire rien |
| | c. C'est triste de n'aimer personne
'it's sad not to love anyone' | c.*C'est triste de ne personne aimer |

Let us examine the various crosslinguistic parametric manifestations of verb movement for lexical verbs as presented in Table 1:

Table 1. Verb movement in English, French and Spanish for lexical verbs

Property in [+finite] context	English	French	Spanish
not, pas, no	no mvt	mvt	no mvt
anything, rien, nada	n/a	mvt	no mvt
anyone, personne, nadie	n/a	mvt	no mvt
not, pas, no/past participle	no mvt	no mvt	no mvt
anything, rien, nada/past participle	n/a	no mvt	mvt
anyone, personne, nadie/past participle	n/a	mvt	mvt
adverbs with verbs	no mvt	mvt	mvt/no mvt
adverbs with past participle	no mvt	no mvt	no mvt
subject floating quantifier	no mvt	mvt	mvt
inverted questions	no mvt	mvt	mvt
Property in [-finite] context	English	French	Spanish
not, pas, no	no mvt	no mvt	no mvt
anything, rien, nada	no mvt	no mvt	no mvt
anyone, personne, nadie	n/a	mvt	no mvt
adverb placement	no mvt	mvt/no mvt	mvt

If we adhere to a strict view of mutually exclusive parameter settings with French as a “[+mvt] language” and English and Spanish as “[−mvt] languages,” we are left with the following exceptions. First, in finite contexts: 1) French past participles do not raise past *personne* or adverbs; 2) Spanish past participles raise past all negation, and floating quantifiers and inversion are allowed. Second, in nonfinite contexts which are not supposed to allow verb raising at all: 1) French verbs must raise past *personne* and do so optionally past adverbs; 2) Spanish verbs raise past adverbs as well.

Table 2 presents the same properties in all three languages for auxiliary verbs in both finite and nonfinite contexts:

Table 2. Verb movement in English, French and Spanish for auxiliary verbs

Property in [+finite] context	English	French	Spanish
not, pas, no	mvt	Mvt	no mvt
Anything, rien, nada	mvt	Mvt	no mvt
Anyone, personne, nadie	mvt	Mvt	no mvt
Adverbs	mvt	mvt	mvt/no mvt
Inverted questions	mvt	mvt	mvt
Property in [-finite] context	English	French	Spanish
not, pas, no	no mvt	mvt/no mvt	no mvt
anything, rien, nada	no mvt	mvt/no mvt	no mvt
anyone, personne, nadie	no mvt	mvt	no mvt
Adverbs	no mvt	mvt/no mvt	mvt

Finite contexts present some exceptions as well in that: 1) Spanish auxiliaries optionally raise past adverbs and always in inverted questions; 2) English auxiliaries systematically raise past negation, adverbs and in inverted questions (i.e., *have/be* raising). In nonfinite contexts: 1) Spanish auxiliaries do raise, but only past adverbs, while 2) French auxiliaries must raise past *personne* and optionally past *pas* and *rien* as well as adverbs.

In addition, English exhibits another kind of short verb movement in so-called quotative inversion defined as “sentences with direct speech complements (‘quote’) to verbs of saying, thinking and writing” which permit an inversion of the subject and the verb. More precisely, “the subject DP remains in Spec-V [...] and the verb raises past to Agr_O” (Collins & Branigan, 1997, p. 1, 2) as illustrated with the following examples:

13. a. “Let’s go with her” suggested Mark.
b. “Don’t answer that” recommended my attorney.

However, this inversion construction does not imply that these verbs have strong features. As noted by Collins & Branigan (1997), “The verb has the same features in quotative inversion as it has in any other construction – its V-features are all weak, as are the V-features of Agr_O. The verb raises solely because it must check the Case features of a Spec-Agr_O trace, so that later movement of the subject will be allowed” (p. 38).

Furthermore, French stylistic inversion as in (14a) and quotative inversion as illustrated in (14b) are explained by the same constraints:

14. a. Nous savions que cela arriverait comme l’avait prédit Marc.
‘We knew that would happen as Mark had predicted’
b. “A quelle heure arrive le train?” demanda Sophie.
‘At what time does the train arrive? asked Sophie’

In sum, the verb movement phenomena in the three languages studied, French, English and Spanish, do not fall neatly into one category or another. All three exhibit some form of movement, which at times goes against theoretical predictions as well as a mutually exclusive view of parameter settings. A solution to the diversity of these cross-linguistic facts would be the following two suggestions: 1) the two settings of the verb movement parameter are not mutually exclusive. French, English and Spanish use both settings of the verb movement parameter: the “[+mvt] setting” and the “[–mvt] setting” for different structures; 2) languages select a dominant or primary parameter setting along with a minor or secondary parameter setting. Thus French uses predominantly a “[+mvt] setting,” while English and Spanish usually prefer a “[–mvt] setting.”

Arabic and word order agreements

According to Bolotin (1995), the asymmetrical agreement patterns of Arabic which were previously explained as incorporation phenomena (Fassi Fehri, 1988) or with different verb movements for different word orders (Abd El-Moneim, 1989; Mohammad, 1990), are best accounted for with inflectional parameters. Two alternations must be explained: a word order alternation and an agreement alternation. Standard Arabic has two different word order patterns, SVO and VSO, along with different inflectional patterns. In SVO, the verb agrees in person, gender and number with a full NP subject while in VSO, the verb agrees with its subject only in person and gender. Bolotin (1995, p. 20, original emphasis) suggests that the Arabic SVO/VSO alternation is explained by a set of four inflectional parameters reproduced in (15):

15.		VSO order	SVO order
	V features of T	strong	strong
	V features of Agr	weak	strong
	N features of T	weak	weak
	N features of Agr	weak	strong

First, in conformity with a minimalist account, the strong verbal features for tense trigger verb movement to AGR for the VSO order while the strong verbal and nominal features on AGR trigger verb movement to AGR and subject movement to [Spec, AGRP] (Chomsky, 1992).

Second, “the agreement alternation that occurs between poor VSO agreement languages like Arabic and rich VSO agreement languages like Berber can be explained by assuming the following parameter values. All settings remain the same, except for the verbal features of AGR” (Bolotin, 1995, p. 22-23, original emphasis).

16.		poor VSO (Arabic)	rich VSO (Berber)
	V features of T	strong	strong
	V features of Agr	weak	strong
	N features of T	weak	weak
	N features of Agr	weak	weak

Thus the different parameter settings produce the following results: the strong verbal features of AGR trigger verb movement to AGR as well as rich verbal agreement while the weak verbal features of AGR do not allow verb movement and verbal agreement is impoverished.

To sum up, Bolotin (1995, p. 24) generalizes agreement patterns for Arabic and Berber as follows:

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|-----|--------------------------|------------------------|
| 17. | strong V features on AGR | Arabic SVO; Berber VSO |
| | weak V features on AGR | Arabic VSO |

And for word order:

- | | | |
|-----|--------------------------|------------------------|
| 18. | strong N features on AGR | Arabic SVO |
| | weak N features on AGR | Arabic VSO; Berber VSO |

Once again, strong features lead to overt verb movement, which then influences word order and agreement properties. Thus verb movement phenomena from a variety of languages clearly indicate that parameter settings may indeed be mutually inclusive.

Following Chomsky (1992), Bolotin (1995) extends these parameter settings to adjectival agreement in Arabic, which presents similar asymmetries: “For subject adjective order, since both the verbal/adjectival features of AGR and the nominal features of AGR are strong, the adjective will raise to AGR_A and the subject to $[Spec, AGR_{AP}]$. Once again, since the head (in this case, an adjective) is in AGR, rich agreement occurs. No such movement will occur for adjective subject order” (p. 25). In other words, the strong and weak verbal features traditionally assumed to be mutually exclusive appear to be mutually inclusive in Arabic and Berber.

In addition, the idiosyncratic agreement pattern noted in Arabic occurs cross-linguistically: 1) in Breton, negative clauses show number agreement only in the VSO order; 2) several dialects of Italian exhibit full agreement with SVO, but only person agreement with VSO (Brandi & Cordin, 1987); and 3) in several dialects of Dutch and Standard Dutch (second person singular only) the verb agrees with its subject in SVO but not VSO (Zwart, 1993). Bolotin (1995) concludes that a wide variety of languages, from Arabic and Berber to Welsh, Italian, and Dutch, are best accounted for by a common parameter setting: weak features on AGR lead to poor agreement while strong features on AGR result in strong agreement. Ouhalla (1991, 1994) also adopts a parametric view of functional categories, and derives the various Arabic word orders by verb movement.

Binding Theory

The concept of strong versus weak morphological features and the checking theory of the minimalist program (Chomsky, 1992, 1995) are extended to anaphoric chains in an attempt to reformulate Principle B of the Binding Theory by Koster (1994). Principle B predicts that bound pronouns should not be found in local domains, but this prediction does not seem to hold in several languages including English and Dutch. The culprit appears to be the morphological distinction of anaphors and pronouns. Koster proposes the redefinition of anaphors as locally bound NPs so that both *him* and *himself* may be anaphors. In Koster’s analysis, there are “two kinds of morphological distinction: (1) specialized forms (like Dutch *zich*) versus nonspecialized forms (like English *him*), and (2) short forms (*zich*, *him*) versus long forms (*zichzelf*, *himself*)” (p. 45). Anaphors have strong morphological features which must be checked in the appropriate SPEC-head configuration; i.e., a strong head. This requirement introduces a parametric distinction between languages: to be licensed,

morphological anaphors must agree with one of the functional nodes AGR-S or AGR-O. Furthermore, this parametric distinction is assumed to be multi-valued: 1) languages such as Frisian do not have anaphoric agreement; 2) languages such as German and Slavic select AGR-S; or 3) languages select AGR-O as in French and English.

However, Koster (1994) points out that “reality is somewhat more complex in the sense that certain languages, like Dutch and Spanish, seem to have both possibilities. Such languages select either the German-Slavic option (AGR-S) or the English-French option (AGR-O). [...] Dutch can choose between two distinct grammars in this respect” (p. 49). In other words, “Dutch may select either of the systems allowed by the possible parameter settings” (p. 56) and thus represents another example of mutually inclusive, as opposed to mutually exclusive, parameter settings. Koster’s examples reproduced here in (19) illustrate the standard Dutch AGR-S option, while the examples in (20) show that different anaphoric forms can exploit the AGR-O option:

19. a. Jan wast zichzelf.
 ‘John washes himself.’
 b. Jan sprak over zichzelf.
 ‘John talked about himself.’
 c. Jan zag een slang naast zich.
 ‘John saw a snake next to him.’
20. a. *Jan wast hemzelf.
 b. Jan sprak over hemzelf.
 c. Jan zag een slang naast hem.

Koster points out that the examples in (19) are clearly more standard than those in (20); furthermore, (19c) is understood from the subject's point of view while (20c) is considered from the speaker's perspective. The fact remains that Dutch uses either one of two parameter settings as exemplified by Spanish as well (Koster, 1994, p. 44):

21. a. Juan se lava.
 John self washes
 ‘John washes’
 b. Juan hable de si mismo/él (mismo).
 ‘John talks about himself’
 c. Juan vió una serpiente junto a si mismo/él (mismo).
 ‘John saw a snake near him(self)’

If Koster’s proposed AGR-S/AGR-O parameter receives further support from other cross-linguistic studies, it will be another example of a multi-valued parameter with mutually inclusive settings.

Summary

The preceding sections presented different parametric accounts in a new light. First, it was suggested that not all parameters are binary. The Governing Category Parameter of Manzini and Wexler (1987) is an example of a well-established multi-valued parameter. Newly suggested multi-valued parameters include: 1) my own suggestion that the rhythm parameter (Nespor 1989) may be viewed as a multi-valued parameter; 2) Saleemi’s (1990)

account of null subject phenomena; and 3) Koster's (1994) account of Dutch binding phenomena.

The second suggestion was that parameter settings need not be mutually exclusive within a particular language. The evidence came from: 1) the rhythm parameter (Nespor, 1989) in phonology which shows that Brazilian Portuguese, Catalan and Polish use both the stress-timed setting and the syllable-timed setting; 2) a Minimalist account of verb movement phenomena in a variety of languages with the strongest support coming from French and Arabic which uses both weak and strong verbal features resulting in different word orders and agreement patterns (Chomsky, 1992; Bolotin, 1995); and 3) Koster (1994) shows that Dutch and Spanish use both parameter settings, AGR-S and AGR-O, to account for anaphors. It is also suggested that languages which instantiate parameters with mutually inclusive settings are set to one major or primary setting and one minor or secondary setting. Let us now consider the theoretical and learnability implications which follow from these suggestions.

LEARNABILITY IMPLICATIONS

First Language Acquisition

The postulation of multi-valued parameters and mutually inclusive settings leads us to revisit the traditional notion of language acquisition as parameter setting. Referring to his multi-valued account of null subject phenomena, Saleemi (1990) first claims that:

a many-valued analysis should be of greater advantage in determining learnability if the corresponding binary analysis requires the postulation of many additional grammatical mechanisms to the system, the exact consequences of which may appear to necessitate some intricate deductive reasoning on the part of the learner. (p. 238)

In other words, a multi-valued analysis in a parametric framework may be less costly than a binary analysis which requires additional mechanisms. Furthermore:

It is plainly obvious that in principle the four values of the parameter should generate languages which form a subset hierarchy, as, proceeding from (a) to (d), each value potentially increases the set of well-formed (p. 243) structures allowed by the parameter.

That is, if lexical pleonastics were in general optional, the situation obtained would be compatible with the monotonic model of parameter fixation proposed by Wexler and Manzini, indicating that the parameter could be fixed without any difficulty on the basis of positive-only evidence. (Saleemi, 1990, p. 242)

Thus, if language acquisition proceeds based on positive evidence only, the number of settings to be adopted should not create extraordinary difficulties. Children do not have a pre-conceived knowledge of the target language: their parser will not expect to have to reject one setting in favor of another. If sufficient positive evidence exists for both, it will adopt both. A detailed cross-linguistic study would determine whether all null subject languages really fall into a subset hierarchy. Saleemi points out that a first problem may be created by the lack of overt pleonastics in some languages. But if a language lacks overt pleonastics, they are simply irrelevant to the acquisition of that language. The important point is that the existing properties for a given language which cluster under the null subject parameter are organized

in a subset hierarchy for that language. Markedness is of course another way to organize a cluster of properties under any given parameter, presumably from the least marked to the most marked. Saleemi (1990) proposes a Markedness Condition with the idea that:

markedness is a function of certain internal properties of language, rather than the external properties of particular languages (cf. Chomsky's distinction between I-language and E-language). The chief criterion for markedness, accordingly, is subset relations among sets of categories affected by the values, rather than among the sets of strings they generate. (p. 244)

Saleemi argues that the Markedness Condition is psychologically more plausible than the Subset Condition "since it is not conceived in terms of languages... [It] defines the order in which parametric choices expressed in the null subject parameter are explored by the child learner" (p. 245) and is combined with a learning principle based on positive-only data, a process he calls "positive identification." A more in-depth analysis is unfortunately beyond the scope of this paper, but should be undertaken in the future.

Second Language Acquisition

In adult second language acquisition, the most obvious question within a principles-and-parameters framework is whether learners are able to adopt the L2 parameter values especially when they differ from their L1 parameter values. Since both principles and parameters are given by Universal Grammar, it amounts to asking whether Universal Grammar is accessible to adult learners (see papers in Ritchie & Bhatia, 1996, for different perspectives, and Bley-Vroman, 1990, for an extensive review). Whether adult L2 learners have full, partial or no access at all to Universal Grammar remains speculative until we have more evidence in support of one option or another.

Although the acquisition of a second language by adult learners does differ from the way in which children acquire their native language, most notably in their level of ultimate success, they do achieve high levels of proficiency (e.g., Birdsong, 1992; White & Genesee, 1996; White & Juffs, 1998; but see also Felix & Weigl, 1991, for arguments against successful second language acquisition in instructional settings). Even learners at relatively low levels of proficiency sometimes have an interlanguage with parameter settings which are disallowed in both the L1 and L2, but which are instantiated in another natural language (Broselow & Finer, 1991; Schwartz & Sprouse, 1994). How is this possible without at least partial access to Universal Grammar? This question will have to remain unanswered for now pending further investigation.

Traditional studies in adult second language acquisition contain the assumption that the learners' task is to "re-set" the parameters which are instantiated in the L1 and the L2 to the appropriate L2 value when the L1 and the L2 exemplify different values. If a parameter is not instantiated in the L1, acquiring the L2 value of that parameter must be very different from learning a different value. It may resemble the parameter setting process of first language acquisition with the obvious differences that: 1) adults already possess one grammar; 2) they are more cognitively mature; and 3) they may be approaching the process of an acquiring an additional language in a conscious manner.

EMPIRICAL EVIDENCE IN SECOND LANGUAGE ACQUISITION

Traditional parameter resetting studies expect to find clustering effects and mixed settings or evidence that both the L1 and L2 settings co-exist is taken as an indication that the learner has failed to reset the parameter to the appropriate L2 setting due to negative interference from the L1, failure to access Universal Grammar, competing general learning mechanisms or a combination of the above. In any case, the two settings are standardly assumed to be mutually exclusive. This is the point made by Schwartz & Gubala-Ryzak (1992) in discussing Pollock's (1989) account of verb movement phenomena:

[...] a natural consequence of Pollock's work is that it neatly captures the differences between the behavior of tensed thematic verbs in French and English by virtue of the mutual exclusivity of the two parametric values on combination with the operation of the other principles of grammar: i.e., if a tensed thematic verb can raise (at S-Structure), it must raise (for the other value is not instantiated in the grammar, and if a if tensed thematic verb cannot raise (at S-Structure), it cannot raise (again, because the parametric choice is not part of the grammar). Thus optionality is not possible and nothing else needs to be added B that is, if the two values are indeed mutually exclusive in any one particular grammar. (p. 12)

However, Schwartz & Gubala-Ryzak's analysis is accurate only for finite lexical verbs. It fails to take into account finite auxiliary verbs in English which do raise, and nonfinite lexical verbs in French which raise past adverbs and *personne*, as well as nonfinite auxiliary verbs, which raise past adverbs and negation. Both the English grammar and the French grammar present a parametric choice between verb raising and no verb raising. It is therefore not surprising that experimental evidence shows that L2 learners do indeed entertain both settings as found in a series of studies (Trahey, 1992; White, 1991a, b, 1992a). The francophone learners correctly accept the grammatical [Subject Adverb Verb] order, but also the ungrammatical [Subject Verb Adverb Object] order in English leading White (1992b) to suggest that "one possibility is that they are entertaining more than one value of the parameter at a time" (p. 125). In other words, Schwartz & Gubala-Ryzak's (1992) claim that the successful triggering of the L2 setting should eliminate the L1 setting is not viable on theoretical grounds and is not supported by empirical data. White (1992b) also points out that "the claim that the language learner (and even the adult native-speaker) can hold two parameter settings at the same time is by no means unheard of. For example, Berwick (1985, p. 184) raises the possibility that an L1 learner faced with conflicting input might maintain two normally mutually exclusive parameter settings at once" (p. 125).

Additional empirical evidence comes a series of studies conducted with Arabic learners of English and English learners of Arabic. Bolotin (1996a) tested Arabic native speakers (NS) on subjacency violations in English relative clauses. Arabic relative clauses are not formed by syntactic movement, but use resumptive pronouns instead. Twenty-one adult Arabic NSs enrolled in ESL classes were administered a grammaticality judgment task with 18 sentences illustrating relative clauses, clefts, and relative clause/cleft combinations to illustrate resumptives and nonresumptives. The results indicate that the learners correctly judge a high number of L2 structures, but also fail to reject ungrammatical structures, which led Bolotin (1996a) to conclude that the L2 learners go through a "transition from one setting to another by means of an interim stage in which they assume a combination setting [...]" (p. 151) since they are using the L2 and the L1 parameter setting at the same time.

Bolotin (1996b) mirrors Bolotin (1996a) in testing 27 English NSs enrolled in intensive Arabic courses on relative clause extractions. A grammaticality judgment task included 4 types of structures (simple and complex resumptive which represent the Arabic [-movement] setting; simple and complex operators as [+movement] counterparts of each structure). Based on the results which revealed that learners do well with simple and complex operators as well as simple resumptives, but not with complex resumptives, Bolotin (1996b) proposes that:

The interlanguage grammar consists of a hybrid of both settings. It is still constrained by UG since there exists a language with this setting (Hebrew), where both strategies are available. However, rather than having one indivisible setting in this interim, speakers fluctuate between the two options; [...] this occurs more so at the beginning, less so as their proficiency increases. From a learnability perspective, this is a more conservative strategy than simply resetting a parameter instantaneously since overlapping grammars are generated at each stage (obligatory and optional movement during the first transition, optional and no movement during the second), rather than disjoint ones. [...] Learners can thus continue to use their L1 setting as they slowly work out the consequences of the new setting. [...] resetting a parameter is a gradual process. (p. 176)

Bolotin (1996c) tested nine Arabic learners of English on parasitic gap structures in relative clauses which are grammatical in English, but not in Arabic. On the other hand, Arabic allows parasitic gaps in *wh*-questions which are generated by movement. The L2 learners performed very well on a grammaticality judgment task composed of 36 sentences (12 parasitic gap structures, 12 resumptive counterparts; cleft constructions and *wh*-questions) since there was no significant difference between the L2 learners and the native speakers. There was however a difference between the L2 learners based on how long they had lived in the U.S.: the most recent newcomers (6 months or less) correctly rejected parasitic gap structures but failed to reject resumptive pronoun structures:

This suggests that they are fluctuating between the L1 and L2 settings – they know to reject the resumptive structures since the L2 setting does not allow these, but they also reject the parasitic gap structures in accordance with their L1 setting. The advanced learners, in contrast, both reject the resumptive structures and accept the parasitic gap structures in high numbers, suggesting that they are using predominantly the L2 setting. (Bolotin, 1996c, p. 280)

There is thus some evidence that L2 learners entertain two parameter settings at the same time when they are mutually inclusive as for the verb movement phenomena in French and Arabic.

CONCLUSION

This paper attempted to account for cross-linguistic phonological and syntactic phenomena which strongly suggest that parameters are not necessarily binary nor limited to mutually exclusive settings contrary to traditional assumptions. Future work will need to address the learnability issues raised by multi-valued parameters and mutually inclusive settings. A closely related and crucial issue is the representation in the mind of a language with mutually inclusive parameter settings, as well as the representation in the mind of a bilingual speakers of two different languages. As Cook (1993) puts it:

principles and parameters cannot be expressed in such a form that it is impossible for one mind to hold more than one grammar. As Stenson (1990, p. 194) puts it, "Any grammatical theory that purports to account for human linguistic competence must also be able to account for bilingual competence and the associated performance. [...] The notion that the mind may simultaneously have two settings for a parameter rather than one means that the actual forms of description have to allow for one mind to switch from one setting to another over short periods of time in code switching or long periods of time in L2 learning. The model of parameter setting must then be considerably more flexible than is normally taken to be the case in principles and parameters theory in allowing the mind to have two settings for any parameter at once." (p. 245)

The field of second language acquisition has quite a daunting and exciting agenda that will certainly require the contributions of closely related fields such as psycholinguistics and neurolinguistics.

NOTES

1. Huang (1982) proposes a complex X-bar schema (see alternative accounts in Koopman (1984) and Travis (1984)).

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